

Attorney's Dkt. No. AMAT/5192.02/CPI/COPPER/PJS

1765

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
 Ling Chen, et al.

Serial No.: 10/032,284

Confirmation No.: 4034

Filed: December 21, 2001

For: Gas Delivery Apparatus And
Method For Atomic Layer
Deposition

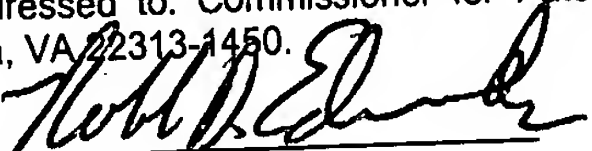
Group Art Unit: 1763

Examiner: Moore, Karla A.

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P.O. Box 1450
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37 CFR 1.8

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Dear Sir:

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The Applicants, and the Attorney who signs below on the basis of the information supplied by the inventor and the information in his file, submit herewith patents, publications, or other information of which they are aware, which may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

While the information submitted in this Supplemental Information Disclosure Statement may be material pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication, or other information referred to therein is prior art for this invention unless specifically designated as such.

In accordance with 37 CFR § 1.97, this Supplemental Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other possibly material information as defined under 37 CFR § 1.56(a) exists.

The patents and/or publications submitted herewith are set forth on the attached Form PTO-1449.

If the sum of \$180.00 is due under 37 CFR § 1.17(p) pursuant to § 1.97, the Commissioner is hereby authorized to charge this fee, and any other fee necessary to make this submission timely, to the Deposit Account No. APPM/5192.02/BTP.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robb D. Edmonds", is written over a horizontal line.

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Attorney for Applicant(s)

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PTO/SB/08a (08-03)

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	10/032,284
Filing Date	December 21, 2001
First Named Inventor	Ling Chen et al.
Group Art Unit	1763
Examiner Name	Karla A. Moore
Attorney Docket Number	APPM/5192.02/CPI/COPPER/PJS
Submission Date	April 23, 2004

Sheet 1 of 9

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	A1	US-4,058,430	11-15-1977	Suntola et al.	
	A2	US-4,389,973	06-28-1983	Suntola et al.	
	A3	US-4,413,022	11-01-1983	Suntola et al.	
	A4	US-4,834,831	05-30-1989	Nishizawa et al.	
	A5	US-4,975,252	12-04-1990	Nishizawa et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	B1	GB 2 355 727 A	05-02-2001	Kim et al.		
	B2	JP 08-264530 (Abstract)	10-11-1996	Haruhito et al.		
	B3	JP 2000-212752	11-12-2002	Chae et al.		X
	B4	JP 2001-172767	06-26-2001	Mikko et al.		X
	B5	JP 2001-328900	11-27-2001	Akinosuke		X

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		Number-Kind Code ² (if known)			
	A19	US-5,730,802	03-24-1998	Ishizumi, et al.	
	A20	US-5,804,488	09-08-1998	Shih et al.	
	A21	US-5,807,792	09-15-1998	Ilg, et al.	
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	A24	US-5,879,459	03-09-1999	Gadgli, et al.	
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	A28	US-6,015,917	01-18-2000	Bhandari et al.	
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	B6	WO 00-16377	03-23-2000	Yi et al.		
	B7	WO 01-17692 A1	03-15-2001	Raaijmakers		
	B8	WO 01-27346 A1	04-19-2001	Elers		
	B9	WO 01-27347 A1	04-19-2001	Elers		
	B10	WO 01-29280 A1	04-26-2001	Elers et al.		

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Sheet 3

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Application Number

10/032,284

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December 21, 2001

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		Number-Kind Code ² (if known)			
	A37	US-6,207,487 B1	03-27-2001	Kim et al.	
	A38	US-6,218,298 B1	04-17-2001	Hoinkis	
	A39	US-6,284,646 B1	09-04-2001	Leem	
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	A52	US-6,379,748 B1	04-30-2002	Bhandari et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	B11	WO 01-29893A1	04-26-2001	Elers et al.		
	B12	WO 01-66832 A2	09-13-2001	Werkhoven et al.		
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	B15	WO 02-08485 A2	01-31-2002	Van Wijck et al.		

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Sheet 4

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Application Number

10/032,284

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December 21, 2001

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		Number-Kind Code ² (if known)			
	A55	US-6,416,577 B1	07-09-2002	Suntoloa et al.	
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	A61	US-6,451,119 B2	09-17-2002	Sneh et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	B16	WO 02-43115 A2	05-30-2002	Pomarede et al.		
	B17	WO 02-45167 A2	06-06-2002	Hujanen et al.		
	B18					
	B19					
	B20					

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	A73	US-6,599,572 B2	07-29-2003	Saani et al.	
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	B25					

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APPM/5192.02/CPI/COPPER/PJS

Submission Date

April 23, 2004

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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**INFORMATION DISCLOSURE
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Sheet

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of

9

Application Number

10/032,284

Filing Date

December 21, 2001

First Named Inventor

Ling Chen et al.

Group Art Unit

1763

Examiner Name

Karla A. Moore

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	1	Kukli, et al. "Properties of {Nb _{1-x} Ta _x } ₂ O ₅ Solid Solutions and {Nb _{1-x} Ta _x } ₂ O ₅ -ZrO ₂ Nanolaminates Grown by Atomic Layer Epitaxy," NanoStructured Materials, Vol. 8, No. 7, 1997, p. 785-93	
	2	Kukli, et al., "In-situ Study of Atomic Layer Epitaxy Growth of Tantalum Oxide Thin Films from Ta(OC ₂ H ₅) ₅ and H ₂ O," Applied Surface Science, March 1997, p. 236-42	
	3	Kukli, et al. "Properties of Ta ₂ O ₃ based Dielectric Nanolaminates Deposited by Atomic Layer Epitaxy," J. Electrochem. Soc., Vol. 144, No. 1 January 1997, p. 300-306	
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<div>Substitute for form 1449B/PTO</div> <div>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</div> <div>(Use as many sheets as necessary)</div> <div>Sheet 9 of 9</div>	Application Number	10/032,284
	Filing Date	December 21, 2001
	First Named Inventor	Ling Chen et al.
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	12	EISENBRAUM, ET AL. "Atomic Layer Deposition (ALD) of Tantalum-based materials for zero thickness copper barrier applications," Proceedings of the IEEE 2001 International Interconnect Technology Conference (Cat. No. 01EX461) 2001.	
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